3.3 and 3.4 - derivatives

2014-10-16 day 36

Product Rule

$$\frac{d}{dx}(fg) = f'g + fg'$$

Quotient Rule

$$\frac{d}{dx}\left(\frac{f}{g}\right) = \frac{f'g - fg'}{g^2}$$

$\frac{d}{dx}(c) = 0$

$\frac{d}{dx}(x) = 1$

$\frac{d}{dx}(x^n) = nx^{n-1}$

$\frac{d}{dx}(\sin x) = \cos x$

$\frac{d}{dx}(\cos x) = -\sin x$

$\frac{d}{dx}(\tan x) = \sec^2 x$

$\frac{d}{dx}(\sec x) = \sec x \tan x$

$\frac{d}{dx}(\cot x) = -\csc^2 x$

$\frac{d}{dx}(\csc x) = -\csc x \cot x$

3.3 and 3.4 - derivatives

2014-10-16 day 36

3.3/ 33-37, 39-40, 43-44, 45, 47,
49, 51, 57-60, 69, 71, 75-76, 80

3.4/ 25-27, 31-33, 36, 43

3.3 and 3.4 - derivatives

2014-10-16 day 36

our commitment

* finish SSPs on your own

also

* for every college application you submit, print out the receipt.

UD applications - check the box "I participated in UD Research Program and won't pay a fee"

submit in October

3.3 and 3.4 - derivatives

2014-10-16 day 36

3.4/13) $f(x) = \dfrac{\cot x}{1+\csc x}$

brute force

$$f'(x) = \frac{\frac{d}{dx}(\cot x)(1+\csc x) - (\cot x)\frac{d}{dx}(1+\csc x)}{(1+\csc x)^2}$$

$$= \frac{(-\csc^2 x)(1+\csc x) - (\cot x)(-\csc x \cot x)}{(1+\csc x)^2}$$

$\sin^2 + \cos^2 = 1$

$\frac{\sin^2}{\sin^2} \quad \frac{\cos^2}{\sin^2} \quad \frac{\sin^2}{\sin^2}$

$1 + \cot^2 = \csc^2$

$-\cot^2 \quad -\cot^2$

$1 = \csc^2 - \cot^2$

$$= \frac{(-\csc x)\left[\csc x + \csc^2 x - \cot^2 x\right]}{(1+\csc x)^2}$$

$$= \frac{(-\csc x)\left[\csc x + 1\right]}{(1+\csc x)^2} = \frac{-\csc x}{1+\csc x}$$